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EXAMINER	
RYMAN, DANIEL J	

ART UNIT	PAPER NUMBER
2616	

DATE MAILED: 06/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/671,468	HASEGAWA ET AL.	
	Examiner	Art Unit	
	Daniel J. Ryman	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13,16-18,21,22 and 24-34* is/are pending in the application.

4a) Of the above claim(s) *1-12* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *13,16-18,21,22 and 24-34* is/are rejected.

7)☒ Claim(s) *13,18,22,25,26 and 31* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Examiner acknowledged Applicant's filing of an RCE on 5/10/2006.

2. Applicant's arguments filed 5/10/2006 have been fully considered but they are not persuasive. On page 19 of the Response, Applicant asserts that

> The cited portions of alleged AAPA merely describe detecting S/N ratios at respective NEXT and FEXT intervals on a subscriber side. Therefore, they do not disclose or suggest the claimed feature of "inserting timing information, which specifies an interval in which effects of crosstalk from said second line are received, into a training symbol sequence."

While Examiner agrees that AAPA fails to disclose that the timing information is inserted into a training symbol sequence, which is disclosed by Qureshi, as outlined below, Examiner, respectfully, disagrees that AAPA fails to disclose transmitting timing information to a subscriber side, wherein the timing information specifies an interval in which effects of crosstalk from a second line are received. As Applicant points out, AAPA discloses that the 400-Hz signal is "phase matched beforehand to that of a 400-Hz signal (ISDN 400-Hz signal) on the office side by 400-Hz information transmitted from the office side." Specification, p. 12, lines 6-12. AAPA goes on to disclose that the subscriber side uses the 400-Hz information to determine "whether a received DMT symbol lies within the FEXT interval, the NEXT interval or outside these intervals." Specification, p. 12, lines 12-16. Thus, the office side transmits to the subscriber side 400-Hz information, where the 400-Hz information specifies the intervals in which crosstalk is received, since the 400-Hz information defines the transmission periods on the ISDN line. In addition, AAPA discloses that the subscriber side uses the 400-Hz

information to phase match its own clock signal. The subscriber side then uses its own clock signal to determine FEXT and NEXT intervals, where in TDD-xDSL, FEXT and NEXT intervals define the transmit intervals for the xDSL line (Specification, p. 15, line 27-p. 16, line 10). As such, Examiner maintains that AAPA discloses "the office side transmitting the timing information [400-Hz signal] to the subscriber side so that the subscriber side can determine a transmit interval for upstream data [Fig. 40: subscriber side transmits when subscriber side experiencing NEXT] and a receive interval for downstream data [Fig. 40: subscriber side receives downstream data when subscriber side experiencing FEXT]."

3. Applicant asserts, on page 20 of the Response, that "Qureshi et al. describe a training sequence for dial-up modems, but do not disclose timing information, which specifies an interval in which effects of crosstalk from said second line are received, being incorporated in a training symbol sequence for training carried out before data communication." While Examiner agrees that Qureshi fails to disclose that the timing information specifies an interval in which effects of crosstalk from said second line are received, which is disclosed by AAPA, as outlined above, Examiner, respectfully, disagrees that Qureshi fails to disclose incorporating timing information in a training symbol sequence for training carried out before data communication. Qureshi discloses, in a modem communication system, inserting timing-information (col. 4, lines 23-44 where the phase transition that beings the second segment "is used to achieve synchronization in the receiver so that the beginning of each subsequent portion of the training sequence can be identified"), into a training symbol sequence at time of training

carried out prior to data communication (col. 4, lines 10-22). As such, Examiner maintains that Qureshi discloses incorporating timing information in a training symbol sequence for training carried out before data communication.

4. On page 20, Applicant further asserts that "Examiner does not provide any suggestion or motivation in AAPA and Qureshi et al. for the proposed combination of these references." Again, Examiner, respectfully, disagrees that no motivation is provided. AAPA discloses transmitting timing information from the office side to the subscriber side where the subscriber side uses the timing information for phase matching its own clock signal prior to data communication. Specification, p. 12, lines 6-28 (the clock signal is used to determine the FEXT and NEXT intervals for bitmap determination, which takes place prior to data communication). AAPA also discloses using a training sequence. Specification, p. 3, lines 9-14 (DMT utilizes "training carried out before communication" where the "training symbol" is the information transmitted by the office side which permits the determination of a S/N ratio at the receive side) and p. 20, line 24-p. 21, line 7 (TDD-xDSL utilizes training). However, AAPA fails to disclose how the timing information is transmitted. Qureshi teaches transmitting timing information, in a modem system, by transmitting a phase change in the training sequence. Col. 4, lines 10-44. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the phase change of Qureshi to transmit the timing information of AAPA by having the receive side phase match its clock signal based on the phase change sent in the training sequence since this permits the subscriber side to phase match its clock signal at a time prior to data communication.

As such, Examiner maintains that there is the requisite motivation to combine the teachings of AAPA and Qureshi.

5. Finally, Applicant merely alleges on page 21 of the Response that "not all aspects of the claimed invention are disclosed or suggested in the cited references." Examiner, respectfully, disagrees. As outlined above and below, Examiner maintains that the cited prior art teaches all aspects of the claimed invention.

6. In view of the foregoing, Examiner maintains that the claimed invention is obvious in view of the cited prior art.

Claim Objections

7. Claim 13 is objected to because of the following informalities: in lines 12-14, "so that the subscriber side can determine a transmit interval for the upstream data and a receive interval for the downstream data" should be "wherein the subscriber side determines a transmit interval for the upstream data and a receive interval for the downstream data based on the timing information". The "can determine" language makes optional, but does not require, the recited limitation whereas the suggested language requires the recited limitation. Appropriate correction is required.

8. Claim 18 is objected to because of the following informalities: in lines 13-14, "so that the subscriber side can determine a transmit interval for the upstream data and a receive interval for the downstream data" should be "wherein the subscriber side determines a transmit interval for the upstream data and a receive interval for the downstream data based on the timing information". The "can determine" language makes optional, but does not require, the recited limitation whereas the suggested

language requires the recited limitation. In addition, in line 11, "a transmitting unit" should be "a transmitting means". The other limitations of claim 18 use the "means for" language, which clearly invokes 35 U.S.C. § 112, sixth paragraph. Thus, Applicant should change "unit" to "means" to clearly indicate that Applicant is invoking 35 U.S.C. § 112, sixth paragraph. If this is not the case, Applicant should amend "a transmitting unit for" to "a transmitting unit" to make this distinction clear. Appropriate correction is required.

9. Claim 22 is objected to because of the following informalities: in lines 19-21, "so that the subscriber side can determine a transmit interval for the upstream data and a receive interval for the downstream data" should be "wherein the subscriber side determines a transmit interval for the upstream data and a receive interval for the downstream data based on the timing information". The "can determine" language makes optional, but does not require, the recited limitation whereas the suggested language requires the recited limitation. In addition, throughout claim 22, Applicant has used "means for" language, which clearly invokes 35 U.S.C. § 112, sixth paragraph, and other language, such as "a cable for" and "unit for," which does not clearly invoke 35 U.S.C. § 112, sixth paragraph. It is unclear if this other language is intended to invoke 35 U.S.C. § 112, sixth paragraph. If so, Applicant should change the language to the "means for" format. Otherwise, Applicant should change, in line 8, "a cable for accommodating" to "a cable to accommodate"; in line 11, "transmitting unit for transmitting" to "transmitting unit to transmit"; in line 13, "receiving unit for receiving" to "receiving unit to receive"; and in line 25, "a processor for executing" to "a processor to

execute". These changes will eliminate the "for" language which suggests an invocation of 35 U.S.C. § 112, sixth paragraph. Appropriate correction is required.

10. Claim 25 is objected to because of the following informalities: in line 11, "a transmitting unit" should be "a transmitting means". The "means for" language clearly invokes 35 U.S.C. § 112, sixth paragraph, and has been used by Applicant for the other limitation in this claim. Therefore, this change will clear up any ambiguity as to whether Applicant is invoking 35 U.S.C. § 112, sixth paragraph, for this limitation. Appropriate correction is required.

11. Claim 26 is objected to because of the following informalities: throughout claim 26, Applicant has used "means for" language, which clearly invokes 35 U.S.C. § 112, sixth paragraph, and other language, such as "a cable for" and "unit for," which does not clearly invoke 35 U.S.C. § 112, sixth paragraph. It is unclear if this other language is intended to invoke 35 U.S.C. § 112, sixth paragraph. If so, Applicant should change the language to the "means for" format. Otherwise, Applicant should change, in line 8, "a cable for accommodating" to "a cable to accommodate"; in line 11, "transmitting unit for transmitting" to "transmitting unit to transmit"; in line 13, "receiving unit for receiving" to "receiving unit to receive"; and in line 23, "a processor for executing" to "a processor to execute". These changes will eliminate the "for" language which suggests an invocation of 35 U.S.C. § 112, sixth paragraph. Appropriate correction is required.

12. Claim 31 is objected to because of the following informalities: in line 3, Applicant uses the phrase "a phase varying unit for" and, in line 5, Applicant uses the phrase "a symbol transmitting unit for". It is unclear whether or not these limitations are intended

to invoke 35 U.S.C. § 112, sixth paragraph. If so, Applicant should change these phrases to "a phase varying means for" and "a symbol transmitting means for," respectively. Otherwise, Applicant should eliminate the "for" by changing "a phase varying unit for" to "a phase varying unit" and "a symbol transmitting unit for" to "a symbol transmitting unit". In addition, Applicant should change such language in claim 32. Appropriate correction is required.

Claim Rejections - 35 USC § 101

13. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

14. Claim 24 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. In order for a method to be statutory, the method must have a practical application. A practical application can be identified in one of the following ways: (1) the claimed invention "transforms" an article or physical object to a different state or thing and (2) the claimed invention otherwise produces a useful, concrete, and tangible result. In this case, the method manipulates a signal, i.e. the training symbol sequence. Regarding (1), since a signal has no physical structure, it cannot be an article or physical object that can be transformed. Regarding (2), the claimed invention fails to *produce* a useful, concrete, and tangible *result* since the ultimate outcome of the method is merely a signal that is transmitted, where the claim does not require the receiver to use the signal. In order to be statutory, the claim should require that the subscriber unit use the timing-information to execute training (see claim

26) or determine a transmit interval for the upstream data and a receive interval for the downstream data (see claim 13).

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

16. Claims 13, 16-18, 21, 22, and 24-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art in view of Qureshi et al (USPN 4,756,007), of record.

17. Regarding claims 13, 18, 22, and 24-26, Applicant admits as prior art a digital subscriber line transmission method, apparatus, and system for transmitting downstream data from a device on an office side to a device on a subscriber side and upstream data from the device on the subscriber side to the device on the office side over a single line (p. 2, lines 1-15: xDSL transmission) by switching between these data transmissions in time-division fashion (p. 15, line 27-p. 16, line 26 where TDD-xDSL switches between upstream and downstream transmissions in a time-division fashion), dividing data of one symbol, modulating carrier waves having different frequencies by each item of divided data and frequency-multiplexing the modulated signals, and transmitting the frequency-multiplexed signals in bursts a few symbols at a time (p. 3, line 1-p. 6 line 9 where xDSL employs DMT modulation), said method comprising the steps of and said apparatus and system comprising means for: a cable for

accommodating said line as a first line and another line as a second line on which transmission of downstream data and transmission of upstream data are performed in time-division fashion (Figs. 32, 33A and 33B and page 6, line 10-page 7, line 4 where the first line is an xDSL line and the second line is an ISDN line); a training-symbol transmitting unit for transmitting a training symbol via said first line at time of training carried out prior to data communication (p. 3, lines 9-14 where DMT utilizes "training carried out before communication" and where the "training symbol" is the information transmitted by the office side which permits the determination of a S/N ratio at the receive side and p. 20, line 24-p. 21, line 7 where TDD-xDSL utilizes training); and a training-symbol receiving unit for receiving a training symbol via said first line (p. 3, lines 9-14 where DMT utilizes "training carried out before communication" and where the "training symbol" is the information transmitted by the office side which permits the determination of a S/N ratio at the receive side and p. 20, line 24-p. 21, line 7 where TDD-xDSL utilizes training); said transmitting unit including: said transmitting unit including: timing-information determining means for determining timing information, which specifies an interval in which effects of crosstalk from said second line are received (Fig. 37 and p. 12, lines 9-16 where "[t]he 400-Hz signal has its phase matched beforehand to that of a 400-Hz signal (ISDN 400-Hz signal) on the office side by 400 Hz-information transmitted from the office side" requires that the office side have timing-information determining means for determining timing information (ISDN 400-Hz signal) where this signal defines the transmission times on the ISDN line and therefore defines the intervals in which effects of crosstalk will be received), and transmitting

means for transmitting the timing-information to the receiving unit at a time carried out prior to data communication (Fig. 37 and p. 12, lines 9-16 where "[t]he 400-Hz signal has its phase matched beforehand to that of a 400-Hz signal (ISDN 400-Hz signal) on the office side by 400 Hz-information transmitted from the office side" requires that the office side transmit this timing information to the receiving side "beforehand") so that the subscriber side can determine a transmit interval for the upstream data and a receive interval for the downstream data (p. 12, lines 12-21 where the receive unit uses the timing information to determine NEXT and FEXT intervals and p. 15, line 27-p. 16, line 10 where the TDD-xDSL system uses the NEXT and FEXT intervals to determine a transmission schedule since transmission is done "in sync with the . . . ISDN ping-pong transmission"); and said receiving unit includes: means for extracting the timing information (Fig. 37 and p. 12, lines 9-16 where phase discriminator in the receiver uses the timing information to determine FEXT and NEXT intervals); and a processor for executing processing based upon this timing information (p. 12, lines 12-21 where the receive unit uses the timing information to determine NEXT and FEXT intervals and p. 15, line 27-p. 16, line 10 where the TDD-xDSL system uses the NEXT and FEXT intervals to determine a transmission schedule since transmission is done "in sync with the . . . ISDN ping-pong transmission").

Applicant does not admit as prior art that the training-symbol transmitting unit includes: timing-information insertion means for inserting the timing information into the training symbol sequence or that said training-symbol receiving unit includes: timing information extraction means for extracting the timing information from the training

symbol sequence, wherein said timing-information insertion means inserts the timing information into the training symbol sequence by changing the phase between adjacent training symbols and said timing information extraction means detects a phase-change point in the training symbol sequence and adopts a timing which is a set time before or a set time after the phase-change detection time, as the start timing of said interval in which effects of crosstalk from said second line are received. However, although Applicant does disclose as prior art determining timing information at the office side and then distributing this information to the receive side "beforehand" (p. 12, lines 12-21), Applicant does not disclose how this distribution occurs in the prior art.

Qureshi discloses, in a modem communication system, a training-symbol transmitting unit including: timing-information insertion means for inserting timing information (col. 4, lines 23-44 where the phase transition that beings the second segment "is used to achieve synchronization in the receiver so that the beginning of each subsequent portion of the training sequence can be identified"), into a training symbol sequence at time of training carried out prior to data communication (col. 4, lines 10-22); and a training-symbol receiving unit including: means for extracting the timing information from the training symbol sequence (col. 4, line 23-44 where the receiver must extract this information in order to achieve synchronization); wherein said timing-information insertion means inserts the timing information into the training symbol sequence by changing the phase between adjacent training symbols (col. 4, lines 22-44 where the phase transition that beings the second segment "is used to achieve synchronization in the receiver so that the beginning of each subsequent portion of the

training sequence can be identified") and said timing information extraction means detects a phase-change point in the training symbol sequence and adopts a timing which is a set time before or a set time after the phase-change detection time (col. 4, lines 22-44 where the phase transition that beings the second segment "is used to achieve synchronization in the receiver so that the beginning of each subsequent portion of the training sequence can be identified"). It is implicit that Qureshi does this in order to establish synchronization in the receiver prior to data communications. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement the time information transmission of Applicant's admitted prior art by using Qureshi's training-sequence phase change by having a training-symbol transmitting unit including: timing-information insertion means for inserting timing information, which specifies an interval in which effects of crosstalk from said second line are received, into a training symbol sequence at time of training carried out prior to data communication; and having a training-symbol receiving unit including: means for extracting the timing information from the training symbol sequence wherein said timing-information insertion means inserts the timing information into the training symbol sequence by changing the phase between adjacent training symbols and said timing information extraction means detects a phase-change point in the training symbol sequence and adopts a timing which is a set time before or a set time after the phase-change detection time, as the start timing of said interval in which effects of crosstalk from said second line are received. It would have been obvious to do this in order to ensure that the transmission

of the timing-information, i.e. the phase of the ISDN 400-Hz signal, arrives at the transmitter prior to data communication.

18. Regarding claims 16 and 21, Applicant's Admitted Prior Art in view of Qureshi discloses that the phase of adjacent symbols constructing a training symbol sequence is varied by 90° or 180° (Qureshi: col. 4, lines 34-37).

19. Regarding claim 17, Applicant's Admitted Prior Art in view of Qureshi discloses that a carrier wave of a predetermined frequency is quadrature modulated (Applicant: p. 3 lines 9-23) and the phase between adjacent symbols obtained by quadrature modulation is varied (Applicant: p. 3 lines 9-23 where the different signal points in QAM vary according to amplitude and phase such that phase between adjacent symbols will be varied).

20. Regarding claims 27 and 31, Applicant admits as prior art a method of and apparatus for digital subscriber line transmission which receives effects of crosstalk from an ISDN ping-pong transmission line (Figs. 32, 33A and 33B and page 6, line 10-page 7, line 4 where the xDSL line receives effects of crosstalk from the ISDN line), comprising, the method comprising the steps of and the apparatus comprising means for: transmitting information to a device on a subscriber side, thereby notifying the device on the subscriber side of the FEXT interval which receives effects of crosstalk from the ISDN ping-pong transmission line (Fig. 37 and p. 12, lines 9-16 where the office side transmits information, i.e. timing-information, to the subscriber side, which the subscriber side utilizes to determine FEXT and NEXT intervals).

Applicant does not expressly disclose as prior art varying a phase between adjacent symbols during a transmit interval of the ISDN ping-pong transmission as a FEXT interval; and transmitting said symbols to a device on a subscriber side, thereby notifying the device on the subscriber side of the FEXT interval which receives effects of crosstalk from the ISDN ping-pong transmission line. However, Applicant does disclose as prior art transmitting information to the subscriber side to signal to the subscriber side the FEXT and NEXT intervals (Fig. 37 and p. 12, lines 9-16). Applicant also suggests as prior art transmitting during the FEXT interval since this is the period of time in which the effects of crosstalk will be lowest (p. 7, lines 20-22). Applicant does not admit as prior art how this timing information is communicated between the office side and the subscriber side.

Qureshi discloses, in a modem communication system, varying a phase between adjacent symbols and transmitting these symbols to a device, thereby notifying the device of a timing interval (col. 4, lines 23-44 where the phase transition that beings the second segment "is used to achieve synchronization in the receiver so that the beginning of each subsequent portion of the training sequence can be identified"). It is implicit that Qureshi does this in order to establish synchronization in the receiver prior to data communications. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement the time information transmission of Applicant's admitted prior art by using Qureshi's phase change by varying a phase between adjacent symbols during a transmit interval of the ISDN ping-pong transmission as a FEXT interval; and transmitting said symbols to a device on a

subscriber side, thereby notifying the device on the subscriber side of the FEXT interval which receives effects of crosstalk from the ISDN ping-pong transmission line. It would have been obvious to do this in order to ensure that the transmission of the timing-information, i.e. the phase of the ISDN 400-Hz signal, arrives at the transmitter prior to data communication.

21. Regarding claims 28 and 32, Applicant's Admitted Prior Art in view of Qureshi does not expressly disclose that the phase between adjacent symbols is varied at two positions within the FEXT interval; however, Applicant's Admitted Prior Art in view of Qureshi teaches that the phase between adjacent symbols is varied within the FEXT interval (Qureshi: col. 4, lines 23-44). It is generally considered to be within the ordinary skill in the art to adjust, vary, select, or optimize the numerical parameters or values of any system absent a showing of criticality in a particular recited value. The burden of showing criticality is on applicant. In re Mason, 87 F.2d 370, 32 USPQ 242 (CCPA 1937); Marconi Wireless Telegraph Co. v. U.S., 320 U.S. 1, 57 USPQ 471 (1943); In re Schneider, 148 F.2d 108, 65 USPQ 129 (CCPA 1945); In re Aller, 220 F.2d 454, 105 USPQ 233 (CCPA 1055); In re Saether, 492 F.2d 849, 181 USPQ 36 (CCPA 1974); In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977); In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Since Applicant's Admitted Prior Art in view of Qureshi teaches that the phase between adjacent symbols is varied within the FEXT interval, it would have been obvious to one of ordinary skill in the art at the time of the invention to vary the symbols any number of times, including two times, absent a showing of criticality by Applicant.

22. Regarding claims 29 and 33, Applicant's Admitted Prior Art in view of Qureshi discloses that said steps of varying phase and of transmitting said symbols are executed at a time of training carried out prior to a data communication (Applicant: p. 12, lines 6-12 where "beforehand" suggests that the transmission of the timing information occurs before data transmission and Qureshi: col. 4, lines 10-44 where the varying phase and transmission of the symbols occurs during a training sequence).

23. Regarding claims 30 and 34, Applicant's Admitted Prior Art in view of Qureshi discloses that the step of varying the phase includes the steps of: quadrature-modulating a carrier wave of a predetermined frequency by said adjacent symbols (Applicant: p. 3 lines 9-23) and varying the phase between said adjacent symbols by 90° or 180° in a QAM constellation diagram (Applicant: p. 3 lines 9-23 where the different signal points in QAM vary according to amplitude and phase such that phase between adjacent symbols will be varied and Qureshi: col. 4, lines 34-37 where the phase change for synchronization is 180°).

Conclusion

24. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ungerbock (USPN 5,353,280) see abstract which discloses transmitting timing information in the training sequence. Gluska et al. (USPN 5,541,967) see abstract which discloses synchronizing modems using a training sequence. Olafsson (USPN 6,212,247) see abstract which discloses synchronizing modems using a training sequence.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Ryman whose telephone number is (571)272-3152. The examiner can normally be reached on Mon.-Fri. 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (571)272-3155. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Daniel J Ryman
Examiner
Art Unit 2616